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REMARKS

This is in response to the Office Action of 16 September 2004. Claims 1-37 are pending in the application, and Claims 1-37 have been rejected.

By this Response and Amendment, Claims 5, 17-19, 21, 26-29, 32, and 35-36 are amended; and arguments traversing the rejections under 35 USC §§ 102 and 103 are presented.

No new matter has been added.

In view of the amendments above and remarks below, Applicants respectfully request reconsideration and further examination.

About The Invention

The present invention relates generally to methods and apparatus for chemical-mechanical polishing. The present invention relates more particularly to an arrangement in which an etching agent is dispensed on the polishing pad downstream of the wafer polishing location, whereas a passivating agent is dispensed on the polishing pad upstream of the wafer polishing location.

Non-narrowing Amendments to Claims 19, 21, and 35

Non-narrowing amendments have been made to Claims 19, 21, and 35 to remove the "•" from the beginning of the subparagraphs of those Claims. No change in the scope of Claims 19, 21, and 35 is intended by these amendments.

Rejections under 35 USC §112, second paragraph

Claims 8-15, 17-18, 26-33, and 35-36 have been rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

The Examiner states that the phrase "the passivating agent" in Claims 8-

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11, 13, 17, 26-31, and 35 appears without proper antecedent support. By this amendment, Claims 5 and 17 have been amended to depend from Claim 2 rather than from Claim 1. Further, Claims 26-29 and 35 have been amended to depend from Claim 21 rather than from Claim 20. It is noted that Claims 30 and 31 depend from amended Claims 26 and 27 respectively, and therefore benefit from the corrections that now provide proper antecedent basis.

The Examiner states that the phrase "the etching agent" in Claims 14-15, 18, 32-33, and 36 appears without antecedent basis. By this amendment, Claims 5 and 18 have been amended to depend from Claim 2 rather than from Claim 1. Further, Claims 32 and 36 have been amended to depend from Claim 21. It is noted that Claims 14-15 depend from amended Claim 5, and Claim 33 depends from amended Claim 32, and therefore these Claims benefit from the corrections that now provide proper antecedent basis.

Applicants respectfully submit that the above described amendments correct the lack of antecedent basis noted by the Examiner, and further submit that these rejections have now been overcome.

Rejections under 35 USC §102(a)

Claims 1-6, 8-11, 14-24, and 37 have been rejected under 35 USC §102(a) as being anticipated by Hu, et al., (US Patent 6,227,947).

Applicants respectfully traverse the rejections of Claims 1-6, 8-11, 14-24, and 37 under 35 USC §102(a), and request that these rejections be withdrawn.

Hu, et al., disclose methods and apparatus for cleaning a polishing pad used for chemical-mechanical polishing of a metal layer on a wafer that include the use of at least two dispensers for dispensing cleaning liquids. However, Hu, et al., are silent with respect to Applicants' claimed limitations regarding a first dispenser being disposed downstream of the wafer's location on the polishing pad by a distance d1, and a second dispenser being disposed upstream of the wafer's location on the polishing pad by a distance d2, wherein the upstream and

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downstream directions are defined in terms of the rotational direction of the polishing pad. There is no disclosure of these recited limitations in Hu, et al. Fig. 5 of Hu, et al., does not provide any indication of the claimed spatial relationship between the dispensers and the wafer's location of the polishing pad. In fact, Fig. 5 illustrates the preferred embodiment of Hu, et al., in which the wafer is not in contact with the polishing pad during the period of time in which dispensers 56, 70 are dispensing various liquids.

In view of the foregoing, Applicants respectfully assert that the rejections under 35 USC 102(a) of independent Claims 1 and 19, and the Claims which depend therefrom, are improper and should be withdrawn.

Rejections under 35 USC §103(a)

Claims 7, 12-13, 25 and 30-31 have been rejected under 35 USC §103(a) as being unpatentable over Hu, et al., (US Patent 6,227,947).

Claims 16 and 34 have been rejected under 35 USC §103(a) as being unpatentable over Hu, et al., (US Patent 6,227,947) in view of Sandhu, et al., (US Patent 6,120,347).

Applicants respectfully traverse the rejections of Claims 7, 12-13, 25 and 30-31 under 35 USC §103(a), and request that these rejections be withdrawn.

As discussed above in connection with the rejections under 35 USC §102, Hu, et al., are silent with respect to Applicants' claimed limitations regarding a first dispenser being disposed downstream of the wafer's location on the polishing pad by a distance d1, and a second dispenser being disposed upstream of the wafer's location on the polishing pad by a distance d2, wherein the upstream and downstream directions are defined in terms of the rotational direction of the polishing pad. Since Hu, et al., do not disclose, suggest or provide motivation for the recited limitations of the independent Claims, Applicants respectfully submit that the Examiner's assertions regarding the obviousness of polishing tungsten, using hydrogen peroxide as an oxidizing

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agent, or phthalic acid as a passivating agent, as recited in the dependent Claims, do not provide the appropriate basis for rejection under 35 USC §103(a).

In view of the foregoing, Applicants respectfully assert that the rejections under 35 USC 103(a) of Claims 7, 12-13, 25 and 30-31, are improper and should be withdrawn.

With respect to Claims 16 and 34, Applicants respectfully traverse these rejections for the reasons substantially as set forth above in connection with Claims 7, 12-13, 25 and 30-31. Although Sandhu, et al., disclose rotating the wafer either clockwise or counterclockwise, Applicants' recited limitations in independent Claims 1 and 19, from which Claims 16 and 34 respectively depend, are not disclosed, suggested, or motivated, by the cited references either singularly or in combination.

In view of the foregoing, Applicants respectfully assert that the rejections under 35 USC 103(a) of Claims 16 and 34, are improper and should be withdrawn.

Conclusion

All of the rejections in the outstanding Office Action of 16 September 2004 have been responded to, and Applicants respectfully submit that the pending Claims 1-37 are now in condition for allowance.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

By 

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Hillsboro, Oregon